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ABSTRACT

The purpose of this study was to construct a valid instrument that would accurately measure parental attitudes toward the motor development of young children. A Likert scaled attitude statement was developed with responses ranging from "very strongly agree" to "very strongly disagree." Parents were asked to reply to 20 statements on the subject. A broad interpretation of the results indicates that parents express underlying attitudes that motor skills are learned behaviors important in total development, that skill learning should be broad in scope, that youngsters should become proficient performers, and that participation in vigorous activity should not be limited by risk of injury. A copy of the statement sheet and the answer sheet is attached to the document. (JD)

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Parental Concern for the Motor Development of the Young Child

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The measurement of attitudes has become a common objective. A variety of assessment instruments measuring a broad range of attitudes have been developed. No instrument currently exists, however, to measure parents' concern for early motor development. The derivation of an attitude statement checklist designed to fulfill this need is described in this report.

The purpose of the procedures outlined below was the development of a Likert scaled attitude statement inventory assessing parents' attitudes about the motor development of preschool children. The criterion statement used as the basis of construct validity to develop attitude statements was the following:

> These are statements which a parent concerned about the motor development of his or her preschooler might strongly agree or strongly disagree with.

Construct Validity

Using the criterion statement as a basis, one positive and one negative attitude statement was solicited from each of approximately 150 University of Texas undergraduates enrolled in elementary physical

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SP012 164

education classes during the fall semester of 1974-75. The statements thus derived were screened for duplication and for violation of Wang's (1932) criteria for writing attitude statements. Thirty-eight acceptable statements resulted. Of these 38 statements, 14 were positive and 24 were negative.

The 38 statements were then submitted to a panel of six judges for verification of their acceptability in fulfilling the criterion statement. Selection of judges was based on expertise and knowledge in the area of motor skill development. Satisfactory construct validity was assumed if at least five of the six judges rated a statement as acceptable. Twenty-four statements were judged acceptable.

Item Function and Inventory Reliability

These 24 statements formed the basis for a pilot study to check item function and inventory reliability. Parents of pre-school children were asked to respond to the instrument. The parents used in the pilot study were obtained through private day care centers in Austin, Texas. Two inventories accompanied by a cover letter were sent home with approximately 180 preschool children. After five days a total of 106 inventories had been returned. The return rate was estimated at 29 percent.[1] Five inventories containing incomplete data were eliminated from further analysis. The remaining 101 parent inventories were scored and analyzed using the Veldman TESTAT program (Veldman, 1967). Output from the program included

[1]No corrections were made for one parent families or parents with two or more preschool children attending the day care centers.

percent response for each individual statement on a five point Likert scale, total score and item means and standard deviations, correlations between items and total scores, and the Alpha reliability coefficient for the complete inventory (Cronbach, 1951).

Based on percent response to each rating category, three test items failed to function. The criteria for acceptable function was a loading of less than 50 percent of the responses on a single extreme, i.e. strongly agree or strongly disagree. A fourth item was later deleted as a result of factor analysis (see Underlying Dimensions of PCMD section). Table 1 shows the descriptive statistics obtained on the resultant 20 item inventory henceforth termed the Parental Concern for Motor Development attitude instrument (PCMD).

TABLE 1

Descriptive Statistics from Initial Testing of 101 Parents

Mean = 82.4158	No. of Ss = 101
S.D. = 7.3556	Range = 61 - 100
Median = 81.7000	Mode = 80

Alpha Reliability = .8205

The 20 statement PCMD had adequate internal reliability, as shown by the Alpha reliability coefficient of .8205. Indices of discrimination were also satisfactory. An index of discrimination coefficient was calculated for each statement using the Fan (1954) method of unweighted upper and lower 27 percents. Because item means were high, indicating a majority of upper extreme Likert scale ratings, the cutoff point for discrimination was set between ratings four and five. Indices of discrimination ranged from .31 to .85 with a mean of .593.

An additional indication that items tended to be functionally homogeneous was the significant (.01 level) correlation of each item with the total score results. Table 2 presents the correlations of items and score totals.[2]

TABLE 2

Correlations of Statements with Totals

Item	Correl.	Item	Correl.
01	.38	11	.55
02	.45	12	.39
03	.57	13	.58
04	.42	14	.67
05	.35	15	.62
06	.45	16	.27
07	.67	17	.52
08	.55	18	.47
09	.45	19	.45
10	.35	20	.59

Sig. Levels: .05 level=.195 .01 level=.245

Underlying Dimensions of PCMD

Though judged to meet the criterion statement that parents concerned about motor development might strongly agree or disagree with each statement, no assessment of the variables underlying parental concern was possible using construct validity, function, and reliability checks alone. A better definition of the dimensions of parental concern for preschool motor development was sought by employing a method of analysis similar to that proposed by Harris and Harris (1971). The method extracted common factors from the intercorrelation matrix of statement ratings which were robus over several computing algorithms, both orthogonal and oblique.

[2]The Pearson correlation coefficients are slightly inflated by the whole-part correlation method employed.

Two principal component solutions, Incomplete Principal Components (Hotelling, 1933) and Rao's Canonical Component (Rao, 1955), as well as two psychometric solutions, Alpha Factor Analysis (Kaiser and Caffrey, 1965) and Image Analysis (Kaiser, 1963) were rotated orthogonally using the Kaiser (1958) normal varimax procedure and obliquely (Delta=0) with the Harris-Kaiser (1964) solution. All factors with eigenvalues greater than 1.00 were rotated.

The factors from the eight derived solutions were matched and comparable common factors having significant loadings on two or more of the same variables over at least six of eight solutions were identified. Loadings of at least .30 (absolute) were considered significant (Guilford and Hoepfner, 1969; Harris and Harris, 1971). In keeping with the method proposed by Harris and Harris (1971) two other types of factors were identified. The first was a type classified as Comparable Specific with only one variable significant on at least six solutions.

One comparable specific factor (CSF) and six comparable common factors (CCF) resulted when the PCMD data was analyzed. Rotated factor loadings of .30 and above which define the CCFs and CSF are given in Table 3.

TABLE 3

Rotated Factor Loadings from Derived Solutions Defining Comparable Common and Comparable Specific Factors on the PCMD

	Orthogonal				Oblique			
	Prin. Comp.	Rao	Alpha	Image	Prin. Comp.	Rao	Alpha	Image
Comparable Common Factor 1 Statements								
#9	66	64	66	50	68	67	68	52
#7	47	48	46	41	57	57	55	52
#14	42	43	43	33	51	51	51	50
#20	42	42	41	34	45	51	48	41
#15	33	33	35		43	43	43	63
#18	40	40	40	35	45	46	43	30
#16	37	39	38		38	37	38	
Comparable Common Factor 2 Statements								
#12	72	75	68	56	72	74	67	54
#11	54	52	54	47	59	57	59	37
#2	54	54	51	51	57	57	54	40
#19	46	41	51	38	48	44	53	
Comparable Common Factor 4 Statements								
#19	74	74	77	56	78	79	80	54
#10	62	63	62	50	62	62	61	53
#14	44	41	44	41	55	53	57	43
#20	36	37	34	34	46	47	45	32
Comparable Common Factor 3 Statements								
#5	74	77	71	56	74	78	71	58
#7	43	42	41	37	49	49	47	47
#1	33	31	34	30	39	39	39	36
#13	33		37	36	39	34	42	
Comparable Common Factor 5 Statements								
#3	68	66	69	51	72	71	74	50
#8	57	60	54	41	62	65	59	45
#6	42	41	44	39	46	44	47	47
#13	37	38	36	35	47	48	47	43
#2	33	32	34		40	40	41	
Comparable Common Factor 6 Statements								
#4	58	50	63	44	62	54	66	
#11	42	49	37	53	59	49		
#1	41	42	44		44	41	48	
Comparable Specific Factor 1 Statement (not listed on PCMD)	55	59	54	37	56	60	55	39

Factor loadings have been rounded to two places and decimal points have been omitted.

Comparable common factor one is clearly a measure of parental concern for motor development which reflects an attitude that motor skill development is in part a learned, not a maturationally controlled, behavior. The statements which compose the factor also stress the need for this learning to encompass a broad variety of skills. Parents who strongly agree and disagree with the seven statements in CCF 1 might best express their attitude in the following manner: Children should be encouraged to learn many skills while young. The attitude trend found in CCF 2 is one which maintains that children should participate in motor skills and become proficient performers early in life without risk of injury creating restrictions. The nucleus of CCF 3 is the expressed concern that young children develop broad skill bases early in life. Comparable common factor 4 is readily identified as an attitude that vigorous activity including rough play and stunts such as tumbling is not harmful for young children, but, on the contrary, is beneficial. Statements which emphasize the dichotomy between mental and motor development and suggest that parents should be concerned primarily about the former are found in CCF 5. The attitude displayed in the responses to these statements was one which stresses the feeling that children need to develop their motor skills as well as their mental abilities. The sixth comparable common factor is less well defined. The three attitude statements found in the factor express need to encourage children to experiment with body movements, disagreement with waiting until children are older to work on skill development, and a feeling that motor skill is not a totally hereditary, immutable characteristic.

The attitude statement which formed the basis of the comparable specific factor identified in the study was the following.

Parents want their children to be well coordinated by the time they reach school age.

The term "well coordinated" may have accounted for the specificity of the statement. It is possible that parents interpreted motor skill development and the concept of coordination as separate entities.

Discussion and Recommendations

The completed attitude inventory, having sufficient discriminatory power, reliability, and validity to function as a measure of parental concern for the motor development of the preschool child, is clearly multi-dimensional in nature. Parents scoring high on the instrument express underlying attitudes that motor skills are learned behaviors important in total development, that skill learning be broad in scope, that youngsters become proficient performers, and that participation in vigorous activity not be limited by risk of injury. The final form of the instrument contains several modifications not found in the original inventory. Nonfunctioning items and items not loading significantly on comparable common factors have been deleted. In addition, the Likert scaling has been extended to a seven point scale to allow for a broader range of response. At the present time the PCMD is still in an experimental state for cautious adoption in exploratory research.[3]

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[3]A copy of the inventory is attached. Permission for use is available from the author on request.

DIRECTIONS: Below you will find some statements about child development. We would like to know how you feel about each statement. People differ widely in the way they feel about each statement. There are no right or wrong answers. An answer sheet has been provided on the back of this page for recording your reaction to each statement. (1) Read each statement carefully, (2) go to the answer sheet, and (3) opposite the number of the statement place an "X" in the square which is under the word (or words) which best describes your feelings about the statement.

After reading a statement you will immediately know if you agree or disagree with the statement. If you agree, then decide whether to place an "X" in the "agree", "strongly agree" or "very strongly agree" column. If you disagree, decide whether to place an "X" under "disagree", "strongly disagree" or "very strongly disagree". If your feelings are neutral place an "X" under "no opinion". Try to avoid using the "no opinion" column in many instances. Please answer each statement as you actually feel about it and BE SURE TO ANSWER ALL STATEMENTS.

1. Parents should encourage their children to experiment with their body movements in their play.

2. A parent would rather have his child's mind stimulated by television than be running around outside.

3. Parents prefer their children inside with their toys, not outside climbing in trees.

4. Motor skill is an inherited ability that you can't really change.

5. Kids should be as active as possible while young and able.

6. Parents don't want their children to get overheated and such from playing outside too much.

7. Parents like their children to be exposed to as many movement skills as possible while they are young.

8. Parents should worry about their children's mental development, not their motor skills.

9. Motor development comes naturally just like growing taller, as far as helping it along--there is really no need to worry.

10. Rough play is good for kids as long as it's not dangerous.

11. It is better to wait and work on physical skills when children are older and less likely to be hurt.

12. In a lot of outdoor activities children can get hurt--they aren't worth the risk.

13. Parents hope that children learn how to use their bodies skillfully.

14. There's too much risk of injury when small children try stunts like tumbling.

15. A child's muscles should be conditioned to move skillfully at an early growing stage.

16. Parents don't think it really makes much difference how much exercise their kids get as long as they turn out all right mentally.

17. It's not good for children to play too hard--it wears them out too much.

18. If a child never cares about exercise and doesn't want to do any, leave him or her alone.

19. Children need to know the right ways to move so they can do well in motor skil

20. Children should learn their motor skills when they're older and understand what they're trying to do much better.

ANSWER SHEET

	VERY STRONGLY AGREE	STRONGLY AGREE	AGREE	NO OPINION	DISAGREE	STRONGLY DISAGREE	VERY STRONGLY DISAGREE
1.	( )	( )	( )	( )	( )	( )	( )
2.	( )	( )	( )	( )	( )	( )	( )
3.	( )	( )	( )	( )	( )	( )	( )
4.	( )	( )	( )	( )	( )	( )	( )
5.	( )	( )	( )	( )	( )	( )	( )
6.	( )	( )	( )	( )	( )	( )	( )
7.	( )	( )	( )	( )	( )	( )	( )
8.	( )	( )	( )	( )	( )	( )	( )
9.	( )	( )	( )	( )	( )	( )	( )
10.	( )	( )	( )	( )	( )	( )	( )
11.	( )	( )	( )	( )	( )	( )	( )
12.	( )	( )	( )	( )	( )	( )	( )
13.	( )	( )	( )	( )	( )	( )	( )
14.	( )	( )	( )	( )	( )	( )	( )
15.	( )	( )	( )	( )	( )	( )	( )
16.	( )	( )	( )	( )	( )	( )	( )
17.	( )	( )	( )	( )	( )	( )	( )
18.	( )	( )	( )	( )	( )	( )	( )
19.	( )	( )	( )	( )	( )	( )	( )
20.	( )	( )	( )	( )	( )	( )	( )

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